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# Environmental Management and Pollution Prevention

## A Guide for Dental Programs

*Ecology Publication #97-413*

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Adapted with permission from *Waste Management Guidelines for King County Dental Offices*, Local Hazardous Waste Management Program of King County, 1993.

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# How to Handle Dental Wastes

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Waste reduction and recycling are the preferred methods for managing wastes. The following is a summary of common dental wastes.

## Amalgam Wastes

Amalgam scrap, chairside trap amalgam, and sludge from amalgam treatment units are considered hazardous due to mercury and silver content. These waste amalgams should not be put in the garbage, down any drain or added to biomedical waste. (Biomedical waste is incinerated. Burning amalgam releases the mercury to the air.)

Amalgam scrap should be recycled by a company that reclaims the mercury and silver. Be sure the company you select uses a process called *retort* to reclaim the mercury. Retort is a heating process that operates under vacuum. If you use a precious metals reclaimer, ask if they have a retort process or if they separate the mercury in the amalgam and send it to a mercury reclaimer.

You can mail amalgam scrap directly to a mercury reclamation company. Before you do this, call them for guidelines on how to ship it. You can also use a mail-in service that provides you with a mailing container and forwards the waste amalgam to a reclamation company.

Another option is to hire a local broker to collect, package and ship the amalgam for you. This is easier, but may cost more.

Wastewater containing amalgam particles may not meet your local sanitary sewer discharge limits due to high concentrations of mercury, *even after the chairside trap*. Although amalgam wastewater may not currently be prohibited from discharge to your sanitary sewer, treatment is recommended before discharge to the sewer. Treatment units for this amalgam sludge are available.

**Never put amalgam wastewater, even if treated, into a septic system.**

**Heavy metals cannot be created or destroyed. This is why it is important to keep heavy metals and other contaminants out of the system in the first place.**

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## How to Handle Dental Wastes (continued)

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### Elemental Mercury

Elemental mercury is defined as extremely hazardous waste due to its toxicity (WAC 173-303-081, Table 9903). *Never pour it down the drain or discard it in the garbage.* Always dispose of elemental mercury through a metal reclaimer or use a hazardous waste disposal company.

### X-ray Processing Fixer

Fixer solutions from X-ray processing contain as much as 3,000 parts per million of silver, greatly exceeding the state hazardous discharge limit for silver of 5 parts per million.

Options for fixer include:

- ☒ **Have your X-ray process solutions supplier pick up spent solution** often for no extra charge.
- ☒ **Drop off spent fixer at a reclaiming facility for no fee.** The company then reclaims the silver from the fixer.
- ☒ **Give spent fixer to a commercial photo lab that will put the fixer through the recovery**

**equipment used for their own processes.** Many local photo-processing labs will take your fixer and reclaim the silver for you.

It is important not to contaminate fixer solution with other material. Most companies prefer that you put spent fixer back into the same container it came in. Label the container "spent X-ray fixer only".

Be sure that any company that accepts your fixer is actually recovering the silver and is familiar with the *Dangerous Waste Regulations* and sewer discharge limits. As the generator of the waste, you are liable for it even after it is taken away for recovery or disposal.

- ☒ **Install a silver recovery system in your office.** There are a number of different silver recovery systems available. Two of the most commonly used types are electroplating systems and chemical recovery cartridges (CRCs). To work effectively, two CRCs must be used in a series unless you can document that one CRC is consistently meeting state and

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**As the generator of the waste, you are responsible for it even after it is taken by another company for recovery or disposal.**

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## How to Handle Dental Wastes (continued)

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local silver discharge limits. However, before purchasing either piece of equipment, it is important to consider whether off-site management options may be more cost effective.

- ☑ **If none of these other options are available or economical, your spent fixer will need to be handled as a hazardous waste.**

### **X-ray Processing Developer**

Used developer, if not contaminated with any other solutions, may be poured down the drain. Flush the drain thoroughly as you discharge the developer.

However, the X-ray film processing units used by many dentists automatically mix fixer and developer. Keeping fixer and developer separate makes it easier to reclaim silver from fixer, and the developer can go down the drain.

If your unit mixes the fixer and developer, contact your equipment supplier to find out if you can purchase an adapter kit that

separates fixer from the developer. Consider purchasing a new X-ray film processing unit capable of separating fixer and developer automatically.

When fixer is mixed with the developer, the mixture becomes dangerous waste due to the silver content of the fixer. This mixture must be treated as a dangerous waste and cannot be disposed of down the drain. Mixtures of fixer and developer should not be put into metallic replacement silver recovery systems as it can plug up the canister, causing a dangerous pressure build up.

*Unused* developer should also not be poured down the drain because it contains hydroquinone. However, the hydroquinone is consumed during product use, therefore *used* developer is safe for disposal to a sanitary sewer. Unused developer that is past its shelf life should be disposed of as a hazardous waste.

**Never put developer, used or unused, into a septic system.**

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**Developer mixed with fixer is a dangerous waste because of the silver content.**

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## How to Handle Dental Wastes (continued)

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### Lead-Foil from X-ray Film Packets

Lead-foil from X-ray film packets contains lead that can potentially leach out in a landfill. Don't throw them in the garbage. Used X-ray film packets should be collected and:

☒ **returned to your film supplier.**

Kodak provides a free container and shipping for lead foils when you purchase fifty packages of film; or

☒ **recycled through a metal reclaimer.**

### Cleaning Solutions and Disinfectants

Disinfectants, cleaning solutions and solutions from chemiclaves and ultrasonic devices may designate as hazardous waste depending on their ingredients and concentrations. Here are some guidelines.

☒ **Use the minimum amount of solution necessary for disinfecting.**

☒ **Use up the product instead of pouring it down the drain to get rid of extra product.**

#### **Formaldehydes, glutaraldehydes, ammonia and phenols.**

If your solution contains these chemicals in concentrations less than one percent, you can pour the waste solution into the sanitary sewer. If the concentration of any one, or all, of these chemicals is greater than one percent, you must get permission from the sewer agency before you discharge.

This rule is under review and may change. To find out the current status, call your local sewer authority.

#### **Acetone and bleaches**

If your solution contains acetone or bleach in a concentration less than ten percent, you can put it in the sanitary sewer. If the concentration is greater than ten percent, manage the solution as a hazardous waste.

#### **Isopropyl alcohol and ethanol.**

Solutions containing isopropyl alcohol and ethanol may designate as hazardous waste depending on the concentration of these

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**Disinfectants and cleaning solutions may designate as hazardous waste depending on their ingredients and concentrations.**

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## How to Handle Dental Wastes (continued)

chemicals. To find out if your solution designates call (360) 407-6700.

### Septic system

Never put a cleaning solution, disinfectant or any other process waste into a septic system, no matter what the concentration is.

- ☑ Dental practices that are connected to septic systems are at risk of contaminating their tanks and drainfields. Wastewaters from your business should be contained and managed as appropriate.

### More Waste Management Tips

**If you aren't sure what kind of waste you have, don't dump it down the drain or toss it in the garbage.**

- ☑ If you aren't sure what kind of waste you have, don't dump it down the drain or toss it in the garbage.
- ☑ Some materials that are no longer useful in your office, such as solvents, may be useful to someone else. Call the Industrial Materials Exchange (IMEX) at (206) 296-4899 for more information.

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## Dental Waste Management Checklist

Waste	Source	Management Options
Amalgam dust and particles	Traps	Use reclaimer
	Rinsewaters	Treatment equipment is currently being tested.
Lead-foil film packets	Patient X-rays	Send to a metal reclaimer.
Developer	X-ray processing	Discharge to sewer system.
Fixer	X-ray processing	Use silver recovery equipment or service.
Combined developer and fixer	X-ray processing	Use silver recovery service or hazardous waste service.

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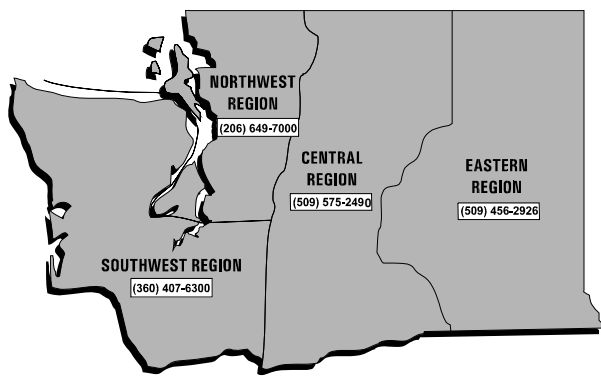
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